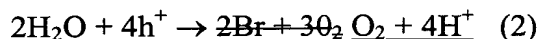


IN THE SPECIFICATION:

On page 5, replace the second full paragraph with the following:

In contrast, as shown by the reaction formula (2), water is oxidized on the hole side, if there exists no dissolved substance (e.g., organic matter) reactive with holes.



On page 9, replace the first full paragraph with:

Fig. 6 shows an apparatus according to a third preferred embodiment of the invention for continuously decomposing bromate ions contained in a liquid. This apparatus has a combination of a pH meter 28 for measuring pH of the liquid and a controller 29 for controlling the driving speed of the pump 23, based on pH of the liquid measured by the pH meter 28. With this function of the controller 29, a certain predetermined amount of the acid solution may be added from the vessel 22 to the liquid such that pH of the liquid is made to be not higher than isoelectric point (e.g., 4) of the liquid photocatalyst.

On pages 13 and 14, replace the paragraph bridging pages 13 and 14 with:

The liquid is purified by using the apparatus shown in Fig. 12, as follows. At first, the liquid is allowed to flow into the ozonization vessel 52 through the inlet 51. Then, the liquid is treated with ozone by bubbling ozone into the vessel 52 from the diffuser 54, to remove organic matters of the liquid and to sterilize the liquid. If the liquid contains bromide ions, the bromide ions may turn into bromate ions by the ozonization. The thus produced bromate ions can be decomposed by the photocatalytic reaction in the vessel 63, as mentioned hereinafter. After the ozonization, the liquid is allowed to flow into the deozonization vessel 55. Then, the liquid is subjected to deozonization by bubbling a gas, which is supplied from a gas supply source 56 (e.g., a blower or cylinder), from a diffuser 57 into the vessel 55. As shown in Fig. 12, a dissolved ozone (DO₃) sensor 58 is disposed downstream of the vessel 55. This sensor 58

monitors the ozone concentration of the liquid to check whether or not the deozonization was sufficiently conducted in the vessel 55. Based on the ozone concentration monitored by the sensor 58, a controller 59 controls the flow rate of the gas from the gas supply source 56 to sufficiently conduct the deozonization in the vessel 55. After passing the dissolved ozone sensor 58, the liquid is allowed to flow into a first pH adjustment section 60. In this section 60, pH of the liquid is made to be not higher than isoelectric point of the photocatalyst by adding an acid solution to the liquid from a first pH adjustment pump 61. A first pH sensor 62 is disposed immediately downstream of the section 60 to monitor pH of the liquid. Based on this monitored pH of the liquid, the controller 59 controls the amount of the acid solution from the pump 61 to properly adjust pH of the liquid. After passing the pH sensor 62, the liquid is allowed to flow into the photocatalytic reaction vessel 63. The photocatalyst of the vessel 63 may be formed into a coating (film) formed on the inner surface of the vessel 63. Alternatively, the photocatalyst may be in the form of powder and may comprise a carrier carrying thereon titanium oxide powder or the like. This photocatalyst is irradiated with the UV light from the UV ~~lamp~~ lamp 64 to generate the photocatalytic reaction in the vessel 63. With this, it is possible to decompose bromate ions contained in the liquid. After passing the photocatalytic reaction vessel 63, the liquid is allowed to flow into a second pH adjustment section 67. In this section 67, pH of the liquid is made to be in a neutral range by adding a basic solution to the liquid from a second pH adjustment pump 68. Immediately upstream of an outlet 69 of the apparatus, a second pH sensor 70 is disposed to monitor pH of the liquid. Based on this monitored pH of the liquid, the controller 59 controls the amount of the basic solution from the pump 68 to properly adjust pH of the liquid. After the pH adjustment in the section 67, the liquid is released from the apparatus. Ozone released from the ozonization and deozonization vessels 52 and 55 is completely collected in a tower 71. Then, the collected ozone is made to be harmless in the tower 71, followed by exhaust into the air. In conclusion, it is possible by the apparatus according to the eighth preferred embodiment of the invention to decompose organic matters of the liquid, sufficiently sterilize the liquid, and completely decompose bromate ions of the liquid including bromate ions generated by the ozonization.

On pages 15 and 16, replace the paragraph bridging pages 15 and 16 with:

Fig. 13 shows an apparatus according to a ninth preferred embodiment of the invention for continuously purifying a liquid containing bromide ions and/or bromate ions. This apparatus is similar to that of the eighth preferred embodiment. Therefore, parts and construction which are the same as those of the eighth preferred embodiment are denoted by the same numerals, and their explanations are not repeated here. The apparatus has a first section (accelerated oxidation vessel) 81 for subjecting the liquid to an accelerated oxidation by an oxidizer to remove organic matters of the liquid and to sterilize the liquid. This vessel 81 has a UV ~~lamp~~ lamp 83 that emits a UV light having a dominant wavelength of about 254 nm. This UV ~~lamp~~ lamp 83 is covered with a tube 82 and electrically connected with a power source 84. In the operation of the apparatus, the liquid is introduced into the vessel 81 from an inlet 51. Then, ozone, which is supplied from an ozone generator 53, is bubbled into the vessel 81 from a diffuser 54. Under this condition, the ozone is irradiated with the UV light. With this, ozone is decomposed into hydroxyl radical having an oxidative power greater than that of ozone. This hydroxyl radical rapidly reacts with organic matters of the liquid in the vessel 81, thereby sufficiently removing the organic matters and sterilizing the liquid. Upon this, if the liquid contains bromide ions, the bromide ions may turn into bromate ions. These bromate ions are decomposed in a photocatalytic reaction vessel 63 in the same manner as that of the eighth preferred embodiment. After passing the vessel 81, the same treatments as those of the eighth preferred embodiment are conducted. In conclusion, it is possible by the apparatus of the ninth embodiment to decompose organic matters of the liquid that are slightly decomposable, sufficiently sterilize the liquid, and completely decompose bromate ions including those generated by the accelerated oxidation. It should be noted that the above-mentioned ultraviolet ray for treating therewith ozone may be replaced with hydrogen peroxide. Furthermore, a photocatalyst also may be used in the accelerated oxidation.

At pages 17 and 18, replace the paragraph bridging pages 17 and 18 with:

In the operation of the apparatus shown in Fig. 15, the liquid is introduced into the first pH adjustment vessel 60 from an inlet. Then, a reagent is added from a ~~first~~ first pH adjustment pump 61 to the liquid in the vessel 60, thereby adjusting the liquid to having a pH necessary for removing carbonic acid. Under this condition, nitrogen gas, which is supplied from a cylinder 91, is bubbled into the liquid from a diffuser 92 to remove carbonic acid dissolved in the liquid. A first pH sensor 62 is disposed downstream of the vessel 60 to monitor pH of the liquid. Based on the monitored pH of the liquid in the form of electric signal, a controller 59 controls the amount of the reagent from the pump 61 to properly adjust pH of the liquid. After passing the pH sensor 62, the liquid is subjected in the same manners as those of the ninth preferred embodiment to an accelerated oxidation in the vessel 81, then a deionization in the vessel 55, then a photocatalytic reaction in the vessel 63, and then to a second pH adjustment in a second pH adjustment section 67. If conditions of the accelerated oxidation vessel 81 are adequate, ozone may not remain in the liquid by the accelerated oxidation. In this case, it is optional to omit the deionization. In conclusion, it is possible by the apparatus of the eleventh preferred embodiment to efficiently decompose slightly decomposable organic matters of the liquid, sufficiently sterilize the liquid, and completely decompose bromate ions including those generated by the accelerated oxidation. According to the invention, it is possible to decompose bromate ions with a lower cost, as compared with a conventional method using activated carbon or ion exchange. In fact, it becomes sometimes necessary to replace activated carbon with a new one, due to its deterioration. In contrast, such replacement is not necessary in the invention. Thus, the maintenance becomes easier in the invention. Furthermore, it is possible to combine a conventional ozonization or accelerated oxidation system with a method or apparatus of the invention.

At pages 19 and 20, replace the paragraph bridging pages 19 to 20 with:

Although the isoelectric point of titanium oxide slightly varies depending on the type of titanium oxide crystal and on the method for producing titanium oxide, the isoelectric point titanium oxide is about 5 to about 6, as shown in Table 2. Thus, as stated above, it is preferable to adjust a liquid to having a pH not higher than 6 for decomposing bromate ions. In general, drinking water or treated

sewage water (final effluent is regulated to have a pH of at least 5.8. Therefore, it is necessary to adjust the liquid to having a pH of, for example, about 5 for the decomposition of bromate ions and then adjust the liquid to having a pH of at least 5.8 for its release. Alternatively, it is necessary to adjust the liquid to having a pH of 5.8-6.0 for both of the decomposition of bromate ions and subsequent release of the liquid. It may be difficult to adjust the liquid to having a narrow pH range of 5.8-6.0. Furthermore, this tends to ~~slower~~ reduce the rate of the bromate ion decomposition, since this pH range is very close to the isoelectric point of titanium oxide. The second photocatalyst of the invention has an isoelectric point of at least about 7 and thus makes the above mentioned pH adjustment unnecessary. With this, it becomes possible to simplify the structure of the apparatus for decomposing bromate ions.